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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/858,305	05/15/2001	David L. Baldwin	014116-006110	3068

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EXAMINER	
RAPP, CHAD	
ART UNIT	**PAPER NUMBER**
2125	5

DATE MAILED: 07/27/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/858,305	BALDWIN ET AL.	
	Examiner	Art Unit	
	Chad Rapp	2125	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 May 2001*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-27* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *5-13* is/are allowed.

6)☒ Claim(s) *1,3 and 14-27* is/are rejected.

7)☒ Claim(s) *2* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *4*.
4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

1. Claims 1-27 are presented for examination.

Allowable Subject Matter

2. Claims 5-13 are allowed over prior art of record.

Independent claim 5, "varying the output level of each air injector by a small amount and noting a resulting change in the reading received from the sensors in order to form an output-to-movement relationship; and applying an inverse of the output-to-movement relationship to the reading received from the sensors in order to calculate a plurality of output adjustments", in combination with the other claimed elements and features is not taught nor fairly suggested by the prior art of record.

3. Claims 14-27 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

4, Independent claims 14 and 21 are allowable for reasons set forth of above as independent claim 5.

5. Claim 2 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Specification

6. The abstract of the disclosure is objected to because it contains too many words(must 150 words or less). Correction is required. See MPEP § 608.01(b).

Claim Rejections - 35 USC § 112

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claims 1-4 and 14-27 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 1, line 5 "the periphery" should be changed to "a periphery".

In claim 1, lines 11-12 "the optical imaging sensing head" should be changed to " an optical imaging sensing head".

In claim 4, lines 5-6 "the control unit" should be changed to "a control unit".

In claim 14, line 10 "the output level" should be changed to " a output level".

In claim 21, line 10 "the output level" should be changed to " a output level".

There is insufficient antecedent basis for the limitations in the above claims.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

10. Claims 1 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsuoka et al. in view of Takacs et al.

Matsuoka et al. teaches the claimed invention (claims 1 and 4) substantially as claimed including an apparatus for positioning a sensing head relative to a work piece comprising:

a. A control unit operative to provide a plurality of control signals to iteratively control positioning of the sensing head relative to the work piece is taught as a control circuit that controls amount of gas supplied to the bearings which controls the height positioning of the movable element(col. 12 lines 55-65);

b. A plurality of air injectors disposed and fixedly connected on the periphery of the sensing head, the air injectors receiving the control signals and ejecting a gas between the sensing head and the work piece to create an air bearing and affect positioning of the sensing head relative to the work piece in response to the control signals is taught as gas bearings that are supplied with gas are controlled by a floating height control system and it floats a movable element(sensing head)(col. 12 lines 46-55);

c. A plurality of sensors providing a plurality of feedback signals to the control unit is taught as the height sensor and the flow sensor send feedback signals to the floating height control system so that the floating height can be maintained at a predetermined height(col.12 lines 46-65).

Matsuoka et al. teaches the above listed details of the independent claim 1, however, Matsuoka et al. does not teach: the feedback signals containing information relating to positioning of the optical imaging sensing head relative to the work piece.

Takacs et al. teaches :

a. The feedback signals containing information relating to positioning of the optical imaging sensing head relative to the work piece is taught as an optical head mounted on an air bearing slide. The optical head can also be thought of as a sensing head(abstract).

It would have been obvious to one of ordinary art at the time the invention was made or used to modify the teachings of Matsuoka et al. with the teachings of Takacs et al. because the Takacs et al. invention provides an optical head on an air bearing slide that moves along a high precision linear air bearing slide. This is the same problem that Matsuoka et al. is dealing with using its air bearing system. Using the air bearings to be very accurate in movement and positioning of the movable element or optical head.

As to claim 3, Matsuoka et al. teaches a support member connected with the sensing head, the support member substantially restricting movement of the sensing head to a) translational movement along a z-axis, b) rotational movement about an x-axis normal to the z-axis and c) rotational movement about a y-axis normal to the z-axis is taught as the moveable element can be moved and/or rotated along the stationary element. The motion of movable element includes one-dimensional motion, two dimensional movement and three-dimensional movement motion. Movable movement includes rotational and rectilinear movement(col. 2 lines 62-66 and col. 4 lines 33-36).

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

12. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Matsuoka et al. in view of Takacs et al.

Matsuoka et al. teaches the claimed invention (claim 4) substantially as claimed including an apparatus for positioning a sensing head relative to a work piece comprising:

a. A plurality of first air injectors fixedly connected with the sensing head is taught as a first set of three gas bearings(col. 11 line 61);

b. A plurality of second air injectors fixedly connected with the sensing head is taught as a second set of three gas air bearings(col. 11 lines 63-64);

c. A plurality of sensors providing a plurality of feedback signals to the control unit, the feedback signals containing information relating to positioning of the sensing head relative to the work piece is taught as the height sensor and the flow sensor send feedback signals to the floating height control system so that the floating height can be maintained at a predetermined height(col.12 lines 46-65);

d. A control unit receiving the plurality of feedback signals from the sensors and controlling the first and second air injectors is taught as the height sensor and the flow sensor send feedback signals to the floating height control system so that the floating height can be maintained at a predetermined height(col.12 lines 46-65);

e. The control unit capable of bringing positioning of the sensing head relative to the work piece within a desired range by iteratively adjusting the first air injectors is taught as the height sensor and the flow sensor send feedback signals to the floating height control system so that the floating height can be maintained at a predetermined height(col.12 lines 46-65);

f. The control unit being capable of adding an additional separation distance to positioning of the sensing head relative to the work piece by operating the second air injectors the second pair of air bearings are used with the magnets to control the height of the moveable element (col. 11 line 35 to col. 13 line 23).

Matsuoka et al. teaches the above listed details of the independent claim 1, however, Matsuoka et al. does not teach: a sensing head.

Takacs et al. teaches:

The optical head can also be thought of as a sensing head(abstract).

It would have been obvious to one of ordinary art at the time the invention was made or used to modify the teachings of Matsuoka et al. with the teachings of Takacs et al. because the Takacs et al. invention provides an optical head on an air bearing slide that moves along a high precision linear air bearing slide. This is the same problem that Matsuoka et al. is dealing with using its air bearing system. Using the air bearings to be very accurate in movement and positioning of the movable element or optical head.

Conclusion

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chad Rapp whose telephone number is (703)306-4528. The examiner can normally be reached on Mon-Fri 11:00-7:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Leo Picard can be reached on (703)308-0538. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Chad Rapp
Examiner
Art Unit 2125

cjr

Albert W. Paladini 7-23-04
ALBERT W. PALADINI
PRIMARY EXAMINER